Remarks

Claims 1-16 are canceled. Claims 17-37 are submitted. Claims 17, 18 and 21-37 are readable on the elected species. Allowable Claims 29, 33 and 36 are written in independent form. The independent claims are, 17, 29, 33 and 36.

Each objection or rejection is addressed below.

Rejection (11/16/2007) Pursuant to 35 U.S.C. § 103(a) Over Newman et al. (US 6,054,205) in view of Mathieu (US 6,187,409) Galer (US 4,450,022) Canada (CA 2006149) Murphy et al. (US 6,179,920) and Palmer (US 6,001,935).

As reiterated by the Supreme Court in ***KSR,*** the framework for the objective analysis for determining obviousness under 35 U.S.C. 103 is stated in *Graham v. John Deere Co.* 383 U.S. 1, 148 U.S.P.Q. 459 (1966). Obviousness is a question of law based on underlying factual inquiries. The factual inquiries enunciated by the Court are as follows:

(1.) Determining the scope and content of the prior art;

(2) Ascertaining the differences between the claimed invention and the prior art; and

(3) Resolving the level of ordinary skill in the pertinent art.

Applicant will now discuss the *Graham* factual inquiries.

Graham v. John Deere factual inquiry (1.) Determining the scope and content of the prior art, Newman et al.

Newman et al. discloses a method (column 7, lines 60-63), "First the glass scrim 15 is created from a plurality of intersecting yarns such as generally transverse yarns **25** and generally longitudinal yarns **30**... Typically the scrim **15** is created by forming a web of weft yarns and then superimposing one or more webs of warp yarns as described in U.S. Pat. No. 4,242,779. Alternatively, the generally transverse yarns **25** and generally longitudinal yarns **30** can be woven or knitted to form the glass scrim **15**."

At column 8, lines 15-20, "Once the glass scrim **15** is formed and coated with the polymeric binder, the melt blown polymer web **20** is preferably formed onto one face **45** of the glass scrim **15** to cover the mesh openings **40** thereon. This provides an exposed grid profile

surface **55** on the opposed face of the glass scrim **15** for mechanical interaction with the cementitious composition of the cement board."

At column 9, lines 35-39, "The glass fiber facing sheet **10** is then applied to the cementitious slurry **76** (and optional slurry **93**) such that the exposed three dimensional grid profile surface **55** on the lower face **50** of the glass scrim **15** directly contacts the cementitious slurry(s)."

In Newman et al., the manner in which Fig. 8 is drawn might suggest a cement skin is formed by the slurry 76 on top of the shown scrim 15 and web 20, but which suggestion would be inconsistent with the specification (column 2, lines 13-14) that states, "glass fiber facing sheet provides a smooth surface which is essentially free of pitting." Moreover, claim 27 of Newman et al recites, "The cement board according to claim 22 wherein the melt blown polymer web provides a substantially smooth exterior surface to said cement board." It is not reasonable and consistent with the specification to interpret Fig. 8 as suggesting a cement skin.

Moreover, Fig. 8 embodies several discrepancies compared with the specification and with Figs. 1-3, which makes Fig. 8 less reasonable and consistent with a suggestion of a cement skin formed by slurry 76.

Fig. 8 embodies a first discrepancy compared with the specification (column 9, lines 35-39), "The glass fiber facing sheet 10 is then applied to the cementitious slurry 76 (and optional slurry 93) such that the exposed three dimensional grid profile surface 55 on the lower face 50 of the glass scrim 15 directly contacts the cementitious slurry(s)." By contrast, Fig. 8 depicts the scrim (numeral 15) on top of the melt blown polymer web 20, such that when, "the glass fiber facing sheet (scrim 15 and web 20) is then applied to the cementitious slurry 76" (cementitious core 80, Fig. 8) the upper face of the scrim 15 faces away from the slurry(s), instead of "directly contacting the slurry(s)" according to the specification (column 9, lines 35-39). (Numeral 15 of the scrim is clearly depicted on top of the web 20). Thereby, Fig. 8 embodies a first discrepancy compared with the specification (column 9, lines 35-39).

A second discrepancy arises from Fig. 8 depicting the scrim 15 (in cross-section) as being one yarn, whereas Figs. 1, 2 and 3 correctly depict the scrim 15 as having two yarns 25 and 30, transverse to each other and in two layers, respectively. See the specification (yarn 25, column 4, line 58) and (yarn 30, column 4, line 59). Thus, Fig. 8 contains a discrepancy compared to Figs.

1-3 and compared to the specification (column 4, lines 58 and 59), for depicting the scrim 15 with one yarn, whereas two yarns 25 and 30 in two layers, respectively, are not depicted but should be, so as to be consistent with the specification (column 4, lines 58 and 59) and with Figs. 1-3.

Fig. 8 being inconsistent with the specification, as above described, and having the above-described discrepancies, amounts to an unreliable source for interpreting Fig. 8 as suggesting a cement skin formed by slurry 76. By contrast, the specification (column 2, lines 13-14), "glass fiber facing sheet provides a smooth surface which is essentially free of pitting," is a reliable source for teaching the glass fiber facing sheet provides a smooth surface, and claim 27 of Newman et al. recites, "wherein the melt blown polymer web provides a substantially smooth exterior surface to said cement board." It would not be reasonable for Fig. 8 to suggest a cement skin formed by slurry 76, when the specification (column 2, lines 13-14) states the facing sheet provides the smooth surface and claim 27 states the glass fiber facing sheet provides a substantially smooth exterior surface.

Fig. 8 discloses another facing sheet (numeral 72). The specification (column 9, lines 6-11) states, "The first facing sheet 72 ... can be used as a facing material for the cement board 12." The manner in which Fig. 8 is drawn might suggest a cement skin covering the facing sheet 72 and formed by the slurry 76, which suggestion would be inconsistent with (column 9, lines 6-11) of the specification describing the facing sheet 72 used as facing material for the cement board 12. Moreover, Fig. 8 depicts the same discrepancies for the facing sheet 72 as for the scrim 12 and the web 20, which discrepancies make Fig. 8 an unreliable source for suggesting a cement skin.

The disclosure in Newman for making a cement skin appears at column 9, lines 30-35, "An additional mixer **90** can be used to apply a low viscosity cementitious slurry **91** to facing sheet **10**. The low viscosity slurry **91** will generally pass through the glass fiber facing sheet **10** ...". The specification of Newman et al. contains no description that the slurry 76 forms a cement skin.

Graham v. John Deere factual inquiry (1.) Determining the scope and content of the prior art, Mathieu.

Mathieu discloses an individual mesh, scrim or fabric (column 16, lines 43-47), "[T]he openings in a mesh, scrim or other fabric in this case are to be sufficiently large to permit passage of the mesh bonding material such as a portland cement slurry, i.e. such that a mesh or scrim is cemented or imbedded in a face or surface." (Underline emphasis added) The scope and content of Mathieu does not disclose a mesh, scrim or fabric in combination with a thin, porous nonwoven web. The specification of Mathieu does not discuss a cement skin or equivalent structure.

Graham v. John Deere factual inquiry (1.) Determining the scope and content of the prior art, Galer.

Galer teaches, "The thickness of the layer of concrete mix formed on the bottom side of the network is determined by the speed of the conveyor belt 15, the consistency of the concrete mix, and the height of the riser 25" (column 5, lines 18-21). Galer discloses the "network" as a mesh, scrim or fabric. Thus, Galer teaches a method of using a riser 25 (riser 25 of a step 24) to promote a layer of concrete mix to penetrate a disclosed "network" (mesh, scrim or fabric), and form on the bottom side of the network. The scope and content of Galer uses a riser 25 to form a cement skin.

Graham v. John Deere factual inquiry (1.) Determining the scope and content of the prior art, Canada.

Page 5, lines 1-9 of Canada states, "The process described herein is capable of producing concrete products, including panels ... with reinforcing layers on their exterior surfaces. Because the reinforcing layers are substantially exposed ...decorative coatings such as paint can generally be applied... with relative ease." Further, at Page 5, lines 10-24, "According to one aspect of the present invention, a process for the manufacture of concrete products includes arranging a surface reinforcing layer of porous material... selected from the group consisting of fabric and moisture-resistant paper, ... and having an inner surface coated with a polymer so the applied polymer penetrates the layer of material. A ...cementitious composition is cast over the layer of material....This composition has a consistency that enables it to partially, yet substantially penetrate the layer of material." Underline emphasis is added to indicate that the cementitious

composition partially penetrates, but does not penetrate through the layer of material and form a cementitious skin.

Further, Canada discloses at Page 13, lines 1-3, "The next step is to coat the inner surface 24 of the fabric or paper layer with a suitable polymer 26 that should penetrate the layer." Canada states, at page 14, lines 10-21, "Figure 5 illustrates the casting of a layer 32 of a cementitious composition. ... This casting step should take place before the polymer coating 26 has dried so that the polymer can assist in the penetration of the cementitious composition." Canada states at page 9, line 29- page 10, line , "In order to provide a secure and durable bond... the cementitious composition, the porous fabric, and the polymer material are selected and applied so as to permit and enable the cementitious composition partially and substantially to penetrate each of the surface-reinforcing layer in the manner illustrated in Figure 90." Underline emphasis is added to indicate that the scope and content of Canada's cementitious composition partially penetrates, which would exclude penetration through the layer of material and forming a cement skin.

Canada states, at page 11, lines 14-16, "Preferably the fabric also provides a suitable finished surface to the final product in order to enable a decorative or finish coat, such as paint, to be applied to it." Canada discloses At page 17, lines 15-24, "Preferably the panel 10 is again coated with polymer 52 to form surface coatings 53 and 54. .... The additional coatings 53 and 54 on the exposed surfaces of the layers 14 and 16 [fabric layers 14 and 16]... enables a better bond between the fabric layer and a final decorative or protective coating such as paint." Underline emphasis added. According to the scope and content of Canada the exposed surfaces of the fabric layer of Canada are to be painted.

Page 9, lines 1-3 of Canada states, "The central core 12 is covered on both its major surfaces with surface-reinforcing layers 14 and 16 of a porous fabric or moisture-resistant paper integrally bonded to the central core layer on opposite sides thereof."

Thereby, the scope and content of Canada discloses that cementitious material, core 12, is covered on both its major surfaces by porous fabric layers 14 and 16, that can be painted, and not covered by a cement skin.

Graham v. John Deere factual inquiry (1.) Determining the scope and content of the prior art, Murphy et al.

Murphy et al. (column 5, lines 34-39) discloses coating a top scrim 96 with water reduces surface tension of cementitious mixture facilitating embedment of the scrim 96 into the cementitious mixture. Murphy et al. (column 9, lines 34-42) discloses a layer of cement 140 between two layers of scrim 46 and 96. "Two outer layers of cement and expanded light weight iron slag aggregate 146 and 147 are positioned on either side of the reinforcing material layers 46 and 96."

Graham v. John Deere factual inquiry (1.) Determining the scope and content of the prior art, Palmer.

Palmer (column 9, lines 30-47) teaches coating a fabric. "This coating causes water placed on the surface to rapidly wet the fabric and to pass through the fabric layer." Further, Palmer teaches (column 10, lines 7-11) "The compositions of the present invention are also useful in applications where it is desirable to make a fiber surface more hydrophilic for better adhesion or easier incorporation into water-borne compositions such as cement mixtures or paper pulps." Palmer's teaching is limited to adhesion of fiber surfaces or incorporation of fiber surfaces in cement mixtures.

Graham v John Deere factual inquiry (2) Ascertaining the differences between the claimed invention and the prior art.

Applicant's claim 17 recites:

> promoting penetration through the thin, porous nonwoven web by a portion of the layer of hydraulic cementitious material to form the cement skin adjacent to the outer face by having the thin, porous nonwoven web comprise alkali resistant polymer fibers coated with a hydrophilic material. (Interpreted by use of the specification, paragraphs [0032], [0035], [0037] and [0039] U.S. Published Application No. 2004/0084127 A1)

Applicant's specification (U.S. Published Application No. 2004/0084127 A1 paragraph [0038]) describes the application of one slurry 16 as the source of cementitious material for the cement skin.

The disclosure in Newman et al. that supports a method of making a cement skin, appears at column 9, lines 30-35, "An additional mixer **90** can be used to apply a low viscosity cementitious slurry **91** to facing sheet **10**. The low viscosity slurry **91** will generally pass through the glass fiber facing sheet **10** ...". The slurry 91 is optional, but when slurry 91 is used, it is additional to another mixer 78 (Fig. 6) applying the slurry 76 of Newman et al. Moreover the "additional mixer 90" is used to perform an additional method step of applying the slurry 91.

Graham v John Deere factual inquiry (3) Resolving the level of ordinary skill in the pertinent art.

It would not be reasonable and consistent with Applicant's specification disclosing one slurry 16 (U.S. Published Application No. 2004/0084127 A1 paragraph [0038]), to interpret the claimed hydraulic cementitious material of Applicant's claim 17 as encompassing Newman et al.'s additional mixer 90 applying the optional slurry 91, in addition to another mixer 78 applying the slurry 76 of Newman et al.

The rejection (11/16/2007) points out (page 3, line 20, to page 4, line 14) that the slurry 76 without optional slurries 93 and 91 "is forced up through the mesh openings of the facing sheet and must extend at least partially through the melt blown web." However, the specification of Newman et al. contains no description that the slurry 76 forms a cement skin. By contrast, the Newman et al. specification (column 2, lines 13-14) states, "glass fiber facing sheet provides a smooth surface which is essentially free of pitting." And claim 27 of Newman et al recites, "The cement board according to claim 22 wherein the melt blown polymer web provides a substantially smooth exterior surface to said cement board."

The rejection (11/16/2007) provides a description (page 5, lines 4-11) according to which Fig. 8 establishes the formation of a cement skin by the slurry 76. Such description is proposed, because it is not stated by the specification. It is proper to propose that Fig. 8 be considered as a

whole to suggest a cement skin by the slurry 76, provided that the consideration of Fig. 8 as a whole be consistent with the specification and with Figs. 1-3, and be reasonably gleaned from Fig. 8 without relying on discrepancies in the Figure. However, Fig. 8 is discredited as a reliable source for suggesting a cement skin formed by slurry 76, because Fig. 8 is inconsistent with the specification (column 2, lines 13-14) and with claim 27, and contains further discrepancies as drawn, as discussed above.

With respect to a combination of Galer and Newman et al., wherein Galer uses a riser 25 to form a cement skin for combination with the cement board of Newman et al., Applicant's claim 17 reciting, "promoting penetration through the thin, porous nonwoven web by a portion of the layer of hydraulic cementitious material to form the cement skin adjacent to the outer face by having the thin, porous nonwoven web comprise alkali resistant polymer fibers coated with a hydrophilic material, " (Interpreted by use of the specification, paragraphs [0032], [0035], [0037] and [0039] U.S. Published Application No. 2004/0084127 A1), which does not reasonably encompass the method of using a riser 25 as disclosed in Galer.

With respect to Canada combined with Newman et al., Canada teaches that a cementitious composition penetrates partially a porous fabric 14 (page 12, line 16). The fabric is on the surface and is intended to be painted, and thereby can not form a cement skin, even when the porous fabric 14 is treated with a polymer (wetting agent) as disclosed by Canada. Thereby, Canada teaches away from Applicant's claim recitals.

Regarding the combination of Murphy et al. with Newman et al., coating a scrim 96 with water according to Murphy (column 5, lines 34-39) is not relevant to the hydrophilic material in Applicant's recited method step, promoting penetration through the thin, porous nonwoven web by a portion of the layer of hydraulic cementitious material to form the cement skin adjacent to the outer face by having the thin, porous nonwoven web comprise alkali resistant polymer fibers coated with a hydrophilic material.

Regarding the combination of Palmer with Newman et al., Palmer's teaching is limited to adhesion of fiber surfaces or incorporation of fiber surfaces in cement mixtures, and is not relevant to Applicant's recited method step, promoting penetration through the thin, porous nonwoven web by a portion of the layer of hydraulic cementitious material to form the cement

skin adjacent to the outer face by having the thin, porous nonwoven web comprise alkali resistant polymer fibers coated with a hydrophilic material.

Regarding Applicant's dependent claims, such claims are separately patentable for the reasons presented herein, and for the reasons in Applicant's Response filed February 14, 2006 by certificate of mailing and incorporated herein by reference.

Rejection (11/16/2007) Pursuant to 35 U.S.C. § 103(a) Over Newman et al. (US 6,054,205) in view of Mathieu (US 6,187,409) Galer (US 4,450,022) Canada (CA 2006149) Murphy et al. (US 6,179,920) and Palmer (US 6,001,935) and further in view of Cooper (US 6,254,817)

Each of Claims 21 and 37, and Claim 25 is separately patentable over the combination of cited references for the reasons discussed above, and is separately patentable over the combination of Cooper, wherein Cooper is referred to in the Office Action for wrapping glass fibers with thermoplastic fibers (alkali resistant fibers) and heating. However, the independent claims are not met by combining glass fibers wrapped with thermoplastic fibers and heating of Cooper with Newman et al. that does not form a cement skin with a slurry 76, and the dependent claims would not be met by combining Cooper with Newman et al. since Cooper provides warp and weft yarns or rovings, but does not disclose a combination of an open mesh united with a thin, porous nonwoven web, and no hydrophilic material is used in Cooper.

Rejection (11/16/2007) Pursuant to 35 U.S.C. § 103(a) Over Newman et al. (US 6,054,205) in view of Mathieu (US 6,187,409) Galer (US 4,450,022) Canada (CA 2006149) Murphy et al. (US 6,179,920) and Palmer (US 6,001,935) and further in view of Schupack (US 4617219)

Claims 24-26 are separately patentable over the combination of cited references for the reasons discussed above, and are separately patentable over the prior art combination with Schupack. Schupack is referred to in the Office Action for disclosing, polypropylene spun bonded as a nonwoven web to be imbedded in cement. However, the independent claims are not met by combining a propylene spun bond of Schupack with Newman et al. that does not form a cement skin with a slurry 76, and the dependent claims would not be met by combining Schupack with Newman et al. since Schupack does not disclose a combination of an open mesh united with a thin, porous nonwoven web, and no hydrophilic material is used in Schupack.

In view of the Amendments to the claims and the Remarks supporting patentability, allowance is requested.

Respectfully submitted,

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